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■

WATER QUALITY AND POLLUTANT SOURCE MONITORING

Proposed Rules

ENVIRONMENTAL PROTECTION AGENCY

[40 CFR Part 35]

[FRL 222-6]

WATER QUALITY AND POLLUTANT SOURCE MONITORING

Notice of Proposed Rulemaking

Regulations are hereby proposed for monitoring in State and interstate water pollution control programs. Interim regulations were promulgated on June 29, 1973 to re-codify portions of 40 CFR Part 35, which pertain to grant awards for water pollution control programs. The interim regulations were published without Appendix A, Water Quality and Pollutant Source Monitoring, which is set forth below.

The Federal Water Pollution Control Act, as amended (33 U.S.C. 1251, et seq.), stipulates that no grant shall be made under Section 106 of the Act to any State, beginning in fiscal year 1974, which has not provided or is not carrying out as part of its program the establishment and operation of appropriate devices, methods, systems, and procedures necessary to monitor, and to compile and analyze data on (including classification according to eutrophic condition), the quality of navigable waters and to the extent practicable, ground waters including biological monitoring; and provision for annually updating such data and including it in the report required under section 305 of the Act. Monitoring is required by Titles I, II, III and IV of the Act, and this Appendix sets forth the monitoring requirement each State must meet.

The objectives of the State monitoring program required by these regulations are to determine compliance with permit terms and conditions, to develop and maintain an understanding of the quality (and causes and effects of such quality) of all waters in the State for the purpose of supporting all State water pollution control activities, to report on such quality and its causes and effects, and to assess the effectiveness of the State's water pollution control program.

The Director of the water pollution control agency in each State is required to develop and implement a strategy for progressing systematically toward implementation of the requirements set forth in this Appendix. The requirements described herein include:

Development of a monitoring strategy;
Coordination with other entities;
Support to the State continuing planning process;
Intensive monitoring surveys;
A primary monitoring network;
Compliance monitoring;
Evaluation of water quality with respect to standards;
Toxic pollutant monitoring;
Groundwater monitoring;
Classification of publicly owned fresh water lakes by eutrophic conditions;
Laboratory support and quality assurance;
Data reporting, handling, and storage;
Collection, analysis, and evaluation of the basic information needed for the annual inventory reports required by Section 305(b) of the Act; and
Annual planning and reporting of program accomplishments in monitoring.

Interested parties are encouraged to submit written comments, suggestions, views, or data concerning these proposed regulations including views as to the desirability of issuing various portions of this information as a regulation or as a guideline to: Director, Grants Administration Division, Environmental Protection Agency, Washington, D.C. 20460. All information received on or before October 15, 1974, will be considered before final regulations are promulgated.

Dated: August 15, 1974.

JOHN QUARLES,
Acting Administrator.

Appendix A—Water Quality and Pollutant Source Monitoring

A. *Purpose.* This Appendix establishes and codifies details of the grant award limitations for monitoring described in Paragraph 35.550-6 of this Part and sets forth the requirements the States must meet to satisfy the monitoring provisions in Titles I, II, III, and IV of the Act.

B. *Objectives and general requirements.* The objectives of the State monitoring program required by the Act and these regulations are to determine compliance with permit terms and conditions, to develop and maintain an understanding of the quality (and causes and effects of such quality) of the waters in the State for the purpose of supporting State water pollution control activities, to report on such quality and its causes and effects, and to assess the effectiveness of the State's pollution control program. To this end each State shall carry out a broad range of monitoring activities both before and after implementing pollution controls, including measurement of pollutant sources, water quality, the factors affecting water quality, and the specific effects of such quality upon beneficial uses of the State's waters.

C. *Definitions.* As used in this Appendix, the following terms shall have the meaning set forth below:

(1) The term "Act" means the Federal Water Pollution Control Act, as amended, (33 U.S.C. 1251, et seq.).

(2) The term "EPA" or "USEPA" means the U.S. Environmental Protection Agency.

(3) The term "Administrator" means the Administrator of the U.S. Environmental Protection Agency.

(4) The term "Regional Administrator" means the Regional Administrator of the EPA Region of which the State is a part.

(5) The term "Director" means the chief administrative officer of a State or interstate water pollution control agency. In the event that responsibility for water pollution control and enforcement is divided among two or more State or interstate agencies, the term "Director" means the administrative officer authorized to perform the particular procedure referred to.

(6) The term "basin" means the streams, rivers, lakes and tributaries and the total land and navigable water area contained in one of the major or minor basins defined by EPA, or other basin units as agreed upon by the State(s) and the Reigonal Administrator. Unless specified otherwise, "basin" shall refer only to those portions within the borders of a single State.

(7) The term "principal aquifer" means an aquifer that serves a significant portion of the population, yields a significant amount of the water used in an area, or is being, or should be reserved for such use.

(8) The term "segment" means a portion of a basin the navigable waters of which have common hydrologic characteristics (or flow regulation patterns); common natural physical, chemical, and biological processes; and common reactions to external stresses, e.g., discharge of pollutants.

(9) The term "reach" means a subdivision of a segment.

(10) The term "water quality limited segment" means any segment where it is known that water quality does not meet applicable water quality standards and which is not expected to meet water quality standards even after the application of the effluent limitations required by sections 301(b)(1)(A) and 301(b)(1)(B) of the Act.

(11) The term "principal discharger" means any person, who, in the judgment of the Director or Regional Administrator, is causing or may be causing serious or critical water quality problems, or who in the judgment of the Director or Regional Administrator should be designated as a principal discharger because of condition of discharge or substantial pretreatment requirements.

(12) The term "cluster" means two or more dischargers which discharge pollutants in such a way that the combination of their effluents causes or may cause water quality standards to be violated.

(13) The term "National Pollutant Discharge Elimination System (NPDES)" means the national system for the issuance of permits under sections 402 and 405 of the Act and includes any State or interstate program approved by the Administrator, in whole or in part, pursuant to Section 402 and 405 of the Act.

(14) The term "permit" means any permit or equivalent document or requirements issued by the Administrator, or, where appropriate, by the Director to regulate the discharge of pollutants pursuant to section 318, 402, 404, and 405 of the Act.

(15) The term "discharger" means any person responsible for the discharge of a pollutant.

(16) The term "parameter" means a quantity or characteristic which describes physical, chemical, or biological conditions such as: temperature; dissolved oxygen; color; count, species composition, or condition of aquatic organisms; streamflow; velocity; and area of channel cross-section.

(17) The term "representative point" means a location in navigable waters, groundwaters, sewer systems, or discharger facilities at which specific conditions or parameters may be measured in such a manner as to characterize or approximate the same at some other location, or throughout a reach, segment, or body of water.

(18) The term "monitoring station" or "station" means a representative point or a point of access to navigable water, groundwater, or pollutant discharge at which parameters have been measured, are being measured, or are planned to be measured.

(19) The term "self monitoring" means any measuring and analyzing activities carried out by a permittee in accordance with permit requirements.

(20) The term "compliance monitoring" means measuring and analyzing pollutant sources, review of reports and information obtained from dischargers, and all other activities conducted by the Director, to detect and/or verify violations of permit conditions, such as effluent limits and compliance schedules.

(21) The term "intensive survey" means the frequent sampling or measurement of parameters at a set of monitoring stations for a relatively short period of time to determine cause, effect, or cause and effect relationships of water quality conditions.

(22) The term "mass balance" means the quantified account of inputs, outputs, losses,

and storage of a material or constituent in a segment, reach, or body of water.

(23) The term "continuing planning process" or "planning process" means the continuing planning process required by section 303(e) of the Act and 40 CFR Parts 130 and 131.

(24) The term "significant lake" means any publicly owned fresh water lake which the Director designates as significant for reasons such as recreational value, significance of public use, eutrophic condition, and size.

(25) The term "agricultural wastes" means the discharge of pollutants from agricultural operations.

(26) The term "rural runoff" means the nonpoint source runoff from nonurban lands in which pollutants are carried into navigable waters.

(27) The term "monitoring activity" means any of the following activities described in this appendix: Coordination with other entities; planning process support; intensive monitoring surveys of navigable waters; state primary network monitoring; compliance monitoring; evaluation of water quality with respect to standards; toxic pollutant monitoring; groundwater monitoring; classification of publicly owned fresh water lakes by eutrophic conditions; laboratory support and quality assurance; data reporting, handling and storage; annual reporting or any other monitoring activity carried out by the Director or required by the Regional Administrator to meet or assist in meeting any objective of the Act.

(28) The definitions of the following terms contained in section 502 of the Act shall be applicable to such terms as used in this part unless the context requires otherwise: "State water pollution control agency," "State," "pollutant," "discharge of a pollutant," "effluent limitation," "toxic pollutant," "point source," "biological monitoring," "discharge," "pollution," "navigable waters," and "person".

D. *Eligibility.* A grant may be awarded to a State water pollution control agency which has submitted an application meeting the program requirements of these regulations provided, however, that the Regional Administrator has approved the program including specific approval of the monitoring program being carried out by the Director to meet the requirements set forth in this Appendix. For interstate agencies, the Regional Administrator may waive any requirement set forth in this Appendix which is not applicable to the particular interstate agency.

E. *Monitoring Strategy.* The Director shall develop, maintain, and implement a Statewide monitoring strategy as part of, and consistent with, the overall State strategy required by regulations published pursuant to section 303(e) of the Act in Part 130 of this Chapter. The monitoring strategy shall conform with the requirements of this Appendix and the Regional Administrator, and it shall:

(1) Detail the present monitoring activities being carried out by the Director as well as those being carried out by other entities insofar as the Director relies upon them to satisfy requirements of this Appendix;

(2) Describe the monitoring plan necessary to progress systematically toward implementation of these regulations. The plan shall define the monitoring program to be achieved by June 30, 1977, set the priorities for attainment of the several monitoring activities required by this Appendix, estimate the level of resources which will be applied to each activity, show milestones with planned dates of implementation, and describe generally what will be done in each of the monitoring activities. The program to be achieved by June 30, 1977, shall be defined in a manner consistent with anticipated program emphasis as determined from the EPA water quality strategy paper, the overall State strategy, State needs, and requirements of the Regional Administrator.

The monitoring strategy shall be submitted to the Regional Administrator by June 15, 1975, as part of the State's program submission and need not be submitted in subsequent years, except when changes to the strategy are made, or as required by the Regional Administrator. The Regional Administrator shall review the monitoring strategy of each State and interstate pollution control agency grant recipient each year and require that it be revised or upgraded if in his judgment either the monitoring program or strategy is inadequate to meet the requirements set forth in this Part.

F. *Program Accomplishment Planning and Review.* As part of the midyear program assessment described in 40 CFR 35.560.1(a), State representatives shall meet with EPA Regional Office representatives to discuss accomplishments and difficulties encountered in fulfilling the monitoring strategy, to plan for monitoring in the coming year, to discuss proposed strategy modifications, and to exchange ideas of mutual interest relating to monitoring.

G. *Coordination with other entities.* The monitoring activities carried out pursuant to these regulations are the responsibility of the Director. However, monitoring activities conducted by other State and Federal agencies, organizations, legal subdivisions of the State, and municipalities should be encouraged and integrated into the State monitoring program where possible to help meet requirements set forth under this Part, provided that laboratory support and quality assurance requirements specified herein are satisfied.

The Director is encouraged to utilize the *Catalog of Information on Water Data*, maintained by the Office of Water Data coordination (OWDC) of the U.S. Department of Interior (USDI) and the related water-data program and coordination activities of the OWDC in developing and carrying out the monitoring activities required by these regulations.

H. *Planning process support.* (1) Water quality conditions including causes and effects, must be measured where needed to support the State's continuing planning process. Monitoring for this purpose must be conducted in such a manner as to enable prediction of environmental changes in receiving water resulting from pollution control actions, changes in pollution loads, and changes in hydrologic regimes. After implementing pollution controls, measurements of causes and effects of pollution, including the physical, chemical, and biological conditions involved, are required to determine the extent to which the control actions taken were successful, and to update or redirect pollution control plans.

(2) Monitoring before and after implementing pollution controls in areas of significant pollution sources, clustered pollution sources, localized nonpoint sources of pollution, and major bodies of water which are known or suspected to be accumulating pollutants should consist of intensive surveys, described in Paragraph I below, which include analyses of the pollution sources and receiving waters.

(3) Compliance monitoring data, self monitoring data, and data obtained from the State primary monitoring network must be evaluated by the Director each year to determine whether the cause and effect relationships found through previous surveys continue to be valid in accounting for current water quality. When such relationships are found to be no longer valid, the pollutant sources and receiving waters must be re-surveyed to support the continuing planning process.

I. *Intensive monitoring surveys of navigable waters.* Intensive monitoring surveys shall be conducted in navigable waters for the following purposes:

(1) Setting priorities for establishing or improving pollution controls;

(2) Determining quantitative cause and effect relationships of water quality, including measuring and evaluating the contribution of pollutants to navigable waters and/or groundwaters from point and nonpoint sources and determining the biological, physical, chemical, and eutrophic conditions of publicly owned fresh water lakes;

(3) Obtaining data for updating water quality management plans, and where appropriate, setting effluent limits and verifying the classifications of segments developed pursuant to Parts 130 and 131 of this Chapter;

(4) Determining the extent to which pollution control actions taken were successful;

(5) Assisting, where necessary, to determine whether or not given discharges will, or do comply with section 301, 302, 306 or 307 of the Act;

(6) Determining any additional water quality management actions required.

An annual schedule of surveys to be conducted shall be submitted to EPA with the State program submission. The levels of effort devoted to a given monitoring survey shall depend upon the severity and complexity of the pollution problem in the survey area. For special purpose studies, the Regional Administrator may waive any particular requirements set forth below for intensive surveys.

The intensive surveys shall provide the basis for analyzing water quality conditions within the survey area and for evaluating the adequacy of the design and operation of the treatment facilities for all principal municipal and industrial dischargers affecting the study area. Station locations, parameter coverage, and sampling frequencies for intensive surveys shall be consistent with particular objectives of the study and with known or suspected forms and variability of pollution occurring in the survey area, and shall be as follows:

(1) *Station locations.* Monitoring stations shall be located in the survey area in such a manner as to measure inputs, transformations, movements, and outputs of pollutants within, to, and from the survey area, including stations located as follows:

(a) In wastewater outfalls or at representative sites for measuring pollutant contributions from point and nonpoint sources;

(b) In receiving waters including stations to define mixing and stratification characteristics and profiles or gradients of water quality with respect to distance, and, where necessary, for determining mass balances of pollutants;

(c) At study area boundaries for measuring flow and water quality entering and leaving the study area;

(d) At locations particularly selected for biological monitoring;

(e) In sediment deposits for measuring benthic demands, concentrations of pollutants in sediments, and the extent to which sediments act as sinks or sources for the various constituents of the water, and for investigating, where needed, sediment transport of pollutants;

(f) At locations as may be required to define other pollutant sources, factors, and sinks for completing determinations of mass balances of pollutants.

(2) *Parameter coverage.* The physical, chemical, biological, microbiological, hydraulic, hydrologic, climatic, and geometric parameters to be measured during monitor-

ing surveys will depend upon the survey purpose and local conditions, and should be tailored to the specific pollution problems of the area. However, all surveys shall include, at representative sites, measurements of dissolved oxygen, temperature, specific conductance, pH, and pollutants known or suspected to be entering the navigable waters of the survey area from specific point sources of pollution. All surveys of flowing streams shall include measurements of streamflow or estimates thereof where measurement is not possible or practical.

Depending upon the survey purpose and local conditions within the study area, some or all of the following parameters shall be measured where needed to satisfy objectives of the particular study and to fulfill requirements set by the Regional Administrator:

(a) Water quality and related parameters which measure intermediate forms or final effects of pollutants—such as nutrients in various forms, and standing crop of plankton, periphyton, or aquatic plants—to determine rates of transformation of water constituents from one form to another and to determine balances of materials affecting water quality;

(b) Biological parameters to evaluate the balance and condition of communities of aquatic organisms and eutrophic conditions, including standing crop, diversity of aquatic communities, and indicator organisms, in accordance with, but not limited to, parameters listed in Table 1;

(c) Biologically related chemical and physical measurements, analyses, and observations, including chemical analyses of tissue of aquatic organisms as necessary to determine the presence and extent of toxic materials;

(d) Microbiological parameters, where appropriate, including indicator organisms and/or specific pathogens in water, sediments, and aquatic biota including shellfish;

(e) Hydraulic and geometric parameters of the streams and bodies of waters in the study area if such data are not otherwise available at representative sites. Such parameters include cross-sectional area and depth, or mean width and depth; stream velocities or times of travel related to flow in streams and estuaries; stage measurements in tidal waters and lakes where water quality is affected by stage variations.

(3) *Sampling Frequencies.* Sampling frequencies must be determined on the basis of the variability of each of the parameters associated with the pollution problem, and must be adequate to define the pollution problem within statistically determined confidence intervals acceptable to the Regional Administrator. The sampling frequencies during intensive surveys must be adequate to determine mass balances of pollutants where necessary to define fluctuations of water quality and related parameters in receiving waters and pollutant sources. Most stations close to pollution sources, in tidal waters, or where diurnal or diel variations occur, must be sampled several times a day during intensive surveys so as to define the behavior of the pollutants and receiving water during each intensive survey.

In complex problem areas, monitoring surveys should be conducted in more than one season in such a manner as to reflect seasonal variations in water quality.

Each year, prior to approval of the State program for the next year, the Regional Administrator may require that the Director include, in the design of any survey(s) to be conducted in the next year, monitoring requirements with respect to any one or a combination of the following:

(a) Sampling frequencies;
(b) Parameters to be measured;
(c) Station locations; and
(d) Time of survey.

The Regional Administrator may likewise require intensive surveys on reaches or segments to provide a basis for setting effluent limits where, in his judgment, monitoring data show that such reaches or segments are water quality limited.

J. *State primary network monitoring.* To establish baselines of water quality, to assist in determining whether or not pollutant dischargers comply with sections 301, 302, 306 and 307 of the Act, to maintain cognizance of water quality conditions throughout the State and to obtain basic information needed for reports required by Section 305(b) of the Act, the Director shall establish and maintain a network of primary water monitoring stations in navigable waters for use in obtaining physical, chemical, and biological data, as well as data taking into account seasonal, tidal, and other variations. The network shall be designed and operated in such a manner as to provide information which, when taken in combination with compliance monitoring data, self monitoring data, and information from intensive surveys, will show whether and to what degree water quality management activities are protecting the quality of the State's navigable waters.

The number and location of monitoring stations, parameter coverage, and sampling frequencies must be adequate to represent the quality of the navigable waters of the State in the annual inventory reports required under Section 305(b) of the Act. Station locations, parameter coverage, and sampling frequencies shall be as follows:

(1) *Station Locations.* Various types of monitoring stations including stations for monitoring stream quality, lake quality, estuarine and coastal water quality, biological conditions, hydrologic conditions, and sediment conditions, are required in the primary network. Primary stations shall be located in navigable waters as follows unless water quality at such locations may be represented by other stations:

(a) At a point within intensive survey areas, which on the basis of information from such surveys, represents reaches having the most critical water quality problems;

(b) At stations upstream and downstream of major population and/or industrial centers on flowing streams where it is possible to sample stream quality in a manner to represent differences in such quality occurring as a result of pollutant discharges from such centers;

(c) At points within lakes, reservoirs, estuaries, and coastal waters as necessary to measure water quality, eutrophic condition, bio-accumulation, and accumulation of pollutants in water and sediments;

(d) In major high quality water use areas, such as public water supply intakes, shellfish harvesting areas, and recreational areas;

(e) In stream-bed sediments;

(f) Within each morphologic zone in the State (i.e., mountains, piedmont, coastal plain) where access is practicable. Such stations shall be located in stream segments largely unaffected by man's activities for determining background levels or baselines of water quality and biological populations.

(2) *Parameter Coverage and Sampling Frequencies.* Water quality samples and measurements must be representative of the variations in water quality and changes in pollution occurring during the year. Streamflow shall be determined concurrently with water quality measurements at all primary stations in rivers and streams. Flow may be determined either by direct measurement or by estimation using nearby stream gauges or measurements at representative sites following guidelines for measurement of flows presented in the Federal interagency report, *Recommended Methods for Water Data Acquisition* (OWDC, USDI). Stage or water surface elevation shall be determined concurrently with water quality measurements in lakes, reservoirs and estuaries if and where water quality variations are apparently related to stage variations. Sampling frequencies shall conform to minimum requirements indicated in parentheses below unless the Director and the Regional Administrator concur that representation of water quality can be equalled or improved by utilizing other frequencies with acceptable resource commitments; in that case, such other frequencies shall be used. Parameter coverage and sampling frequencies for each primary station agreed upon by the Director and the Regional Administrator shall include, where relevant:

(a) Parameters known or suspected to be associated with major upstream pollution sources such as areas of high population, industrial centers, agricultural and urban runoff, and mine drainage; and parameters specifically mentioned in the State's water quality standards relating to the sampling area (monthly or more often as necessary to be representative of variations in water quality during the year);

(b) Stage measurements in tidal waters and measurements of fresh water inflow to estuaries (concurrently with water quality measurements, measured or estimated from measurements at representative sites, taking into account flushing times and tidal phasing);

(c) Heavy metals and other toxic materials, oil and grease, chemical oxygen demand, total Kjeldahl nitrogen, and pesticides, in sediments at sediment stations (annually);

(d) Dissolved oxygen, temperature, specific conductance, and pH, at all primary monitoring stations (monthly beginning in Fiscal Year 1975);

(e) Total phosphorus, total Kjeldahl nitrogen, dissolved nitrite plus nitrate, total organic carbon, and chemical oxygen demand at all primary monitoring stations (monthly beginning in Fiscal Year 1976);

(f) Biological parameters at selected stations, including chlorophyll *a* and parameters sufficient to evaluate the balances and conditions of indigenous communities of aquatic organisms, including standing crop, species diversity, and the presence or absence of indicator organisms in accordance with, but not limited to, parameters and frequencies shown in Table 1;

(g) Biologically related chemical and physical analyses and observations at selected stations, including chemical analyses of tissue as necessary to determine presence, extent, and impact of toxic pollutants designated under Section 307(a) of the Act (annually);

(h) Microbiological parameters, both indicator organisms and specific pathogens where appropriate, in both navigable waters and commercially harvestable shellfish sampled at selected stations (as required).

Each year, prior to approval of the State program for the next year, the Regional Administrator may require that additional measurements be made in the primary network during the next year at specific new, or previously established, stations and frequencies and for particular parameters if, in his judgment, the primary monitoring network is deficient in such respects.

K. *Compliance monitoring.* Compliance monitoring requirements for a given State shall be carried out as follows:

(1) In States having approved NPDES permit programs, the Director shall carry out monitoring activities to determine compliance with permits, to validate self-monitoring reports, and as necessary, to provide support for enforcement actions. Procedures for carrying out such activities shall be as mutually agreed upon by the Director and the

Regional Administrator. The Director shall inspect the facilities of dischargers, described in Subparagraphs (a), (b), and (c) below, including, where appropriate, effluent sampling and examination of monitoring records, reports, equipment, and methods. Such inspections are required as follows:

(a) *Principal Dischargers*—The Director shall designate principal dischargers and identify them as such in the list of dischargers required by Subpart D of Part 130 of this chapter. The Regional Administrator may identify specific dischargers which the Director shall designate as principal dischargers. The Director shall update such identifications in the list of dischargers and assure, each year, that they are accurate. The Director shall conduct inspections, including effluent sampling, at least once each year at the facilities of all dischargers designated as principal dischargers;

(b) *Selected Dischargers*—Inspections, with or without effluent sampling, as appropriate, shall be conducted at the facilities of selected dischargers not included in Subparagraph (a) above. The method of selecting such other dischargers to be inspected shall be based upon random selection each year or shall be as mutually agreed upon by the Director and Regional Administrator;

(c) *Follow-Up Investigations*—The Director shall review self-monitoring data, reports obtained from permittees, complaints, data obtained from activities described in Subparagraph (a) and (b) above, and any other available data sources for the purpose of identifying permit violations and permittee report errors. When permit violations are indicated, the Director shall take appropriate action in accordance with the Act and Parts 124 and 125 of this Chapter.

(2) In States not having approved NPDES permit programs, but having authorities similar to those provided under Section 308 of the Act, the Director may to the extent authorized by the Regional Administrator, conduct inspections similar to those described in Subparagraph (1) above in connection with EPA issued permits.

(3) While conformance with the quality assurance requirements described in Paragraph P below is required in all monitoring activities included in this Appendix, extraordinary emphasis shall be placed upon quality assurance in the compliance monitoring activities, and all samples shall be collected, preserved, and analyzed in accordance with the quality control requirements described in Paragraph P.

L. *Evaluation of Water Quality With Respect to Standards.* In each State, the Director shall review data obtained from the primary monitoring network and any other available pertinent data for the purpose of identifying waters apparently not in compliance with water quality standards. In the event that such noncompliance is indicated, the Director shall evaluate the apparent violations and proceed as in Subparagraph K (1) (c) above; in States not having approved NPDES permit programs, he shall notify the Regional Administrator of the violations in amutually agreed upon manner. The Director shall also take appropriate action through the State's continuing planning process in the event of such violations. Intensive surveys, described in Paragraph I above, may be required in such cases to determine the magnitude, extent, and cause of violations.

M. *Toxic Pollutant Monitoring.* Studies and systematic sample collection from navigable waters, groundwaters, sediments, and biological communities are required to determine whether toxic pollutants, designated under Section 307(a) of the Act, are entering the State's water and for determining their origin and the priority for appropriate control action in the event they are found.

N. *Groundwater Monitoring.* The Director shall designate principal aquifers in a manner mutually agreeable to the Regional Administrator. In the designation of principal aquifers, the Director should utilize aquifer testing and classification methodology presented in the Federal interagency report, *Recommended Methods for Water-Data Acquisition* (OWDC, USDI) for developing and carrying out the State-wide groundwater monitoring program. Initial designation shall be completed in Fiscal Year 1975, based upon existing data, and updated as necessary. To the extent practicable, the Director shall establish and maintain a State-wide groundwater monitoring program which shall consist of a network of groundwater quality monitoring stations sampled in a systematic manner and designed to determine baseline conditions and provide early detection of pollution. A program of identification and surveillance of existing and potential groundwater pollution sources shall complement this network.

Groundwater quality monitoring shall be conducted at representative points relative to groundwater pollution sources and in areas of high utilization of groundwater. The location of groundwater monitoring stations will be dictated by the type and distribution of potential pollution sources. Selected water supply wells may be utilized for monitoring purposes. However, installation of additional monitoring wells may be necessary where experience shows that existing wells and other groundwater monitoring stations do not provide adequate coverage.

Parameter coverage will vary with natural and manmade conditions and with use of the groundwater. Sampling frequency will be dictated by local conditions and the potential threats involved. Each year, prior to approval of the State program for the next year, the Regional Administrator may require that additional groundwater measurements be made during the next year at specific locations and frequencies and for particular parameters if, in his judgment, the State's groundwater monitoring program is deficient in such respects. Groundwater related inventories are required as follows:

(1) *Inventory of Groundwater Monitoring Stations*—The Director shall develop and maintain an inventory of existing wells which are or may be suitable for inclusion in the State-wide groundwater monitoring network. This inventory shall be developed by April 15, 1976, and shall be updated as additional wells are selected or installed for the purpose of determining groundwater quality in accordance with this Appendix. Types of groundwater quality monitoring wells to be identified in the inventory include, but are not limited to, wells for saline water intrusion monitoring, baseline monitoring, routine monitoring in zones of high utilization of groundwater, and monitoring in the vicinity of pollution sources. The *Catalog of Information on Water Data*, maintained by the OWDC, USDI, should be consulted and utilized to the extent practicable in developing the inventory.

(2) *Inventory of Groundwater Pollution Sources*—Monitoring is required of waste disposal sites and other pollution sources which pollute or threaten pollution of the groundwaters of the State. Where appropriate, the types of pollution sources to be monitored include, but are not limited to, injection wells, sanitary landfills, chemical stockpiles, municipal and industrial waste lagoons, waste holding ponds, and sludge drying beds. Each State shall develop an inventory of groundwater pollution sources by April 15, 1976, and thereafter the inventory shall be updated annually.

O. *Classification of Pubicly Owned Fresh Water Lakes by Eutrophic Conditions.* As part of maintaining an understanding of the nature and extent of water quality conditions for the State, the Director shall prepare by April 15, 1975, an inventory of publicly owned fresh water lakes including descriptive information on lakes which the Director designates as significant. The Director shall provide the Regional Administrator with a description of the criteria used in selecting lakes to be designated as significant and shall maintain the inventory and improve it as additional pertinent information is obtained. The principal emphasis in preparing, maintaining, and improving the inventory shall be in obtaining information on lakes which exhibit noticeable eutrophy. Initially, the inventory may include estimates when specific information is not known. It shall include the following information for lakes or the portions thereof which are included within the State:

(1) Number and total combined area of publicly owned fresh water lakes;

(2) Number and total combined area of significant lakes;

(3) Number and total combined area of significant lakes which are known to exhibit noticeable eutrophy as indicated by abnormal quantities or types of algae, aquatic plants, sedimentation, and other specified indicators or environmentally modifying factors. Such other indicators may include dissolved oxygen, pH, total phosphorous, total Kjeldahl nitrogen, and total organic carbon, particularly if their measured or estimated values are beyond the limits of applicable water quality standards;

(4) Number and total combined area of significant lakes that are known to exhibit no noticeable eutrophy or other problems;

(5) Number and total combined area of significant lakes for which the presence or absence of noticeable eutrophy is not known.

For each significant lake or reservoir that exhibits noticeable eutrophy or other problems, the following information must be supplied;

(1) Name, location, average depth, acres of lake surface area, and square miles of drainage area contributing surface water runoff to the lake;

(2) Nature of problem reported as algae, aquatic plants, sedimentation, and/or other specified indicators or environmentally modifying factors;

(3) Cause(s) of problem reported for each of the following categories as principal cause, intermediate contributing cause, or not applicable as identifiable cause:

(a) Municipal waste (including names or appropriate identification of municipal sources),

(b) Industrial waste (including names of appropriate identification of industrial sources),

(c) Septic tanks,

(d) Agricultural wastes,

(e) Urban storm drainage (including names or appropriate identification of urban sources),

(f) Rural runoff,

(g) Natural,

(h) Other (identify).

(4) Narrative comments when needed for clarification.

P. *Laboratory Support and Quality Assurance.* The State water monitoring program shall produce data and information which may be used to describe the quality of State waters and characteristics of pollution sources in an accurate and consistent manner. Emphasis shall be placed upon quality assurance, and all samples required by this Appendix shall be collected, preserved, and analyzed in accordance with

the quality control requirements set forth in this paragraph.

Laboratories (or combinations of Laboratories) supporting the State monitoring program shall provide physical, professional, and analytical capabilities and quality assurance as follows:

(1) Physical and professional capabilities shall be adequate to perform analyses, in compliance with items 2 thru 8 below, for each of the water quality measurements listed in regulations published in Part 136 of Subchapter D of this Chapter, pursuant to Section 304(g) of the Act, and biological measurements listed in Table 1.

(2) Sample preservation for effluent analyses shall be conducted according to methods cited in the EPA manual entitled *Methods for Chemical Analysis of Water and Wastes*, unless superseded by sample preservation methods cited in Part 136 of Subchapter D of this Chapter. All other sample preservation shall be conducted in accordance with generally acceptable practices unless otherwise required by the Regional Administrator. Likewise, sample collection and handling shall be conducted in accordance with generally accepted procedures unless otherwise required by the Regional Administrator.

(3) Time-sensitive samples shall be delivered from the field and analyzed within specified holding times. Until superseded by designation in published EPA analytical reference methods, maximum holding times for sensitive samples shall be as specified in the EPA manual identified in Subparagraph (2) above.

(4) Procedures shall be instituted for assuring sample integrity during sampling, transport, storage, and analysis.

(5) For any samples collected for the purpose of providing evidence in enforcement actions, the Director shall follow such chain of custody procedures as will satisfy State rules or laws for introduction of evidence into enforcement or judicial proceedings.

(6) Physical, chemical, and microbiological analyses of ambient water quality and for facilities inspections shall be conducted by the use of analytical methods as specified in regulations published in Part 136 of Subchapter D of this Chapter, pursuant to Section 304(g) of the Act. Unless otherwise specifically required by the Regional Administrator, analyses of physical, chemical, biological, and microbiological parameters not identified in Part 136 of Subchapter D of this Chapter shall be conducted in accordance with generally acceptable methods such as those cited in the following references:

(a) *Standard Methods for the Examination of Water and Wastewater* (APHA).

(b) *Annual Book of Standards, Part 23, Water: Atmospheric Analysis* (ASTM).

(c) *Methods for Chemical Analysis of Water and Wastes* (USEPA).

(d) *Biological Field and Laboratory Methods for Measuring the Quality of Surface Waters and Effluents* (USEPA).

(e) *Recommended Methods for Water Data Acquisition* (OWDC, USDI).

(f) *Methods for Collection and Analysis of Water Samples of Dissolved Minerals and Gases* (USGS, USDI).

(g) *Methods for Collection and Analysis of Aquatic Biological and Microbiological Samples* (USGS, USDI).

(7) The Director of any State water pollution control agency or interstate agency wishing to use a method not cited in Part 136 of Subchapter D of this Chapter for preservation or analysis of parameters cited in said Part, shall submit an application to the Regional Administrator for approval to employ such alternative methods. Such applications shall include a technical description of the proposed alternative method together with the reason(s) for seeking to use a method other than according to Subparagraph (2) and/or (6) above. The Regional Administrator may require that the Director provide a technical evaluation of the proposed method, as deemed appropriate by the Regional Administrator, to supplement the application. To insure utilization of uniform measurement methodology on a nationwide basis, the director of the EPA Methods Development and Quality Assurance Research Laboratory shall recommend alternative methods and proceduces for measurement of physical, chemical, and biological characteristics for acceptance by the Regional Administrators. For the same purpose, the Regional Administrators shall forward copies of applications for alternative methods to the laboratory director for review and recommendation. Within 90 days of receipt by the Regional Administrator of an application for an alternative method, the Regional Administrator shall notify the State or interstate Director of approval or rejection, or shall specify any additional information which is required to determine whether to approve the proposed method.

(8) All participating laboratories shall routinely utilize and document intralaboratory analytical quality control procedures, including a combination of techniques such as: spiked sample recovery, replicate sample analyses, and reference sample analyses in a manner mutually agreed upon by the Director and the Regional Administrator. The operation of such an intralaboratory analytical control program shall conform to practices recommended in the EPA manual *Handbook for Analytical Quality Control in Water and Wastewater Laboratories*, as revised.

The laboratories shall participate in and document interlaboratory testing programs, including sample splitting between State monitoring support laboratories and EPA laboratories as needed.

(9) The Director shall make all monitoring support laboratories, laboratory data records, and records indicating laboratory techniques and quality control procedures used, open to EPA review as required by the Regional Administrator.

Q. *Data Handling, Storage and Reporting.* Pollutant source data, water quality data, and related data shall be analyzed, correlated, and made available to EPA in a form, volume, and manner approved by the Regional Administrator in conformance with the requirements set forth in this Paragraph and in 40 CFR 35, Subpart B. Unless otherwise specified by the Regional Administrator, compliance monitoring data shall be made available to EPA within ninety days after it is acquired by the Director, intensive survey data shall be made available to EPA within ninety days after it is coleach survey, and data from the Primary Monitoring Network and the Groundwater Monitoring Network shall be made available to EPA within ninety days after it is collected.

The Director shall utilize an information system capable of preparing, screening, validating, and transmitting to EPA the water monitoring data collected by the State in accordance with these regulations. The data shall be made available in a format suitable for direct entry into the EPA water information system and shall specifically include the following:

(1) All data collected from stations particularly identified as intensive survey stations, primary monitoring stations, and groundwater monitoring stations described above, beginning with data collected in Fiscal Year 1975, including accurate latitude and longitude coordinates, station type codes, and other station descriptors for each station;

(2) Pertinent hydraulic and geometric data obtained in connection with intensive surveys and primary monitoring network activities;

(3) All data acquired by the Director in support of the requirements set forth in Paragraph K above;

(4) A listing each fiscal year of the stations to be monitored in the primary monitoring network in the following year, highlighting changes from the current year, and including for each station, descriptions of station location, station type, parameter coverage, and sampling frequencies;

(5) The inventory of groundwater monitoring stations;

(6) The groundwater pollution source inventory;

(7) The inventory of lakes required in accordance with Paragraph O above;

(8) The discharger inventories required by Subpart D of Part 130 of this Chapter;

(9) Other monitoring data and information as may be required by the Regional Administrator.

The Director may elect to participate in the EPA water information system to satisfy requirements stated above. Descriptions of this system are available from the Regional Administrator. If the Director does not elect to use the EPA system, he shall provide a description of his proposed alternative system and a plan to make the data available to EPA in a form compatible with the EPA information system.

R. *Annual Inventory and Input to State Strategy.* The State's monitoring program shall provide for collection, analysis, and evaluation of basic information required for the annual inventory reports required by Section 305(b) of the Act. The results of the monitoring activities described herein are intended to supply the minimum monitoring information required for such inventories except that monitoring in addition to that anticipated in program grant applications, already submitted for fiscal year 1975, shall not be required for the annual inventory report due in 1975. The monitoring information and annual inventories shall be used in developing and maintaining the State strategy required by regulations published in 40 CFR 130.40 pursuant to Section 303(e) of the Act and shall be reported each year in the Section 106 Program Submission in the manner prescribed in the annual guidance for State program development.

TABLE 1.—*Biological monitoring*

Community and parameter	Priority [1]	Collection and analysis method [2]	Sampling frequency [3]
Plankton:			
Counts and identification	1	Grab samples	Once each in spring, summer, and fall.
Chlorophyll a	2		
Biomass as ash-free weight	2		
Periphyton:			
Counts and identification	1	Artificial substrates	Minimally once annually during periods of peak periphyton population density and/or diversity.
Chlorophyll a	2		
Biomass as ash-free weight	2		
Macrophyton:			
Areal coverage	1	As circumstances prescribe.	Minimally once annually during periods of peak macrophyton population density and/or diversity.
Identification	1		
Biomass as ash-free weight	2		
Macro-invertebrate:			
Counts and identification	1	Artificial and natural substrates.	Once annually during periods of peak macro-invertebrate population density and/or diversity.
Biomass as ash-free weight	2		
Flesh tainting	2		
Toxic substances in tissue [4]	2		
Fish:			
Toxic substances in tissue [4]	1	Electrofishing or netting.	Once annually.
Counts and identification	2		
Biomass as wet weight	2		
Condition factor	2		
Flesh tainting	2		
Age and growth	2		

[1] Priority: 1—Minimum program, 2—Add as soon as capability can be developed.
[2] See "Biological Field and Laboratory Methods for Measuring the Quality of Surface Water and Effluents."
[3] Keyed to dynamics of community.
[4] See "Analysis of Pesticide Residues in Human and Environmental Samples," USEPA, Perrine Primate Research Laboratories, Perrine, Fl. 32157 (1970); and "Pesticide Analytical Manual," USDHEW, FDA, Washington, D.C.

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